

## CLAIMS

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1. A linear motor comprising:
    - (a) a tubular outer yoke;
    - (b) a tubular inner yoke disposed in said outer yoke;
    - (c) a coil provided to one of said outer yoke and said inner yoke;
    - (d) a permanent magnet vibrating between said outer yoke and said inner yoke following a magnetic flux produced by said coil; and
    - (e) a vibrator made of magnetic material and supporting said permanent magnet.
  2. The linear motor as defined in Claim 1, wherein said permanent magnet is fixed to a side face of said vibrator on said coil side.
  3. The linear motor as defined in Claim 1, wherein a plurality of coils are disposed on one of said inner yoke and said outer yoke, a plurality of said permanent magnets are fixed to an opposite side face of said vibrator to said coil, a plurality of said permanent magnets are arranged in a vibrating direction of said vibrator and said adjacent permanent magnets have unlike polarities, said vibrator has a slit between said adjacent magnets.
  4. The linear motor as defined in Claim 1, wherein electrical resistance of said vibrator is not less than  $100 \mu \Omega \cdot \text{cm}$ .
  5. The linear motor as defined in Claim 1, wherein permeability of said vibrator is more than 10 times as that of vacuum.

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6. The linear motor as defined in Claim 1, wherein said vibrator is made of material comprising iron and chrome.

7. The linear motor as defined in Claim 6, wherein said vibrator is made of material comprising 80 - 90 wt% of iron and 10 - 20 wt% of chrome.

8. The linear motor as defined in Claim 1, wherein said vibrator is made of material comprising iron, chrome and aluminum.

9. The linear motor as defined in Claim 8, wherein said vibrator is made of material comprising 75 - 88 wt% of iron, 10 - 20 wt% of chrome and 2 - 5 wt% of aluminum.

10. The linear motor as defined in Claim 1, wherein said vibrator is made of material comprising iron and silicon.

11. The linear motor as defined in Claim 1, wherein said vibrator is made of material comprising nickel and iron.

12. The linear motor as defined in Claim 1, wherein at least one slit is provided on a side face of said vibrator.

13. The linear motor as defined in Claim 12, wherein the slit is long and narrow along vibrating direction of said vibrator.

14. The linear motor as defined in Claim 1, wherein at least one section made of electrically insulating resin is provided on a side face of said

vibrator.

15. A compressor including a linear motor, said motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner

yoke;

(d) a permanent magnet vibrating between said outer yoke and said inner yoke following a magnetic flux produced by said coil; and

(e) a vibrator made of magnetic material and supporting said permanent magnet.

16. A linear motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner

yoke;

(d) a permanent magnet vibrating between said outer yoke and said inner yoke following a magnetic flux produced by said coil; and

(e) a vibrator supporting said permanent magnet, wherein said permanent magnet is fixed to said vibrator on a side of one of said outer yoke and said inner yoke whichever includes said coil.

17. A compressor including a linear motor, said motor comprising:

- (a) a tubular outer yoke;
- (b) a tubular inner yoke disposed in said outer yoke;
- (c) a coil provided to one of said outer yoke and said inner

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yoke;

(d) a permanent magnet vibrating between said outer yoke and said inner yoke following a magnetic flux produced by said coil; and

(e) a vibrator supporting said permanent magnet,  
5 wherein said permanent magnet is fixed to said vibrator on a side of one of said outer yoke and said inner yoke whichever includes said coil.

18. A linear motor comprising:

10 a yoke section comprising a compression-formed and molded body made of metal magnetic particles; and  
a mover vibrating along said yoke section.

19. The linear motor as defined in Claim 18, wherein said motor includes:

15 (a) a tubular outer yoke;  
(b) a tubular inner yoke disposed in said outer yoke;  
(c) a coil provided to one of said outer yoke and said inner yoke;

(d) a permanent magnet vibrating between said outer yoke and said inner yoke following a magnetic flux produced by said coil; and

(e) a vibrator supporting said permanent magnet,  
20 wherein at least one of said outer yoke and said inner yoke is a compression-formed body made of metal magnetic particles.

25 20. The linear motor as defined in Claim 18, wherein said yoke section is a compressed and molded body made of metal magnetic particles and electrically insulating resin.

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21. The linear motor as defined in Claim 18, wherein said yoke section is a compression-formed body made of metal magnetic particles, and has an electrically insulating layer on surface thereof.

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22. The linear motor as defined in Claim 21, wherein the electrically insulating layer on the surface of said yoke section is made of inorganic material.

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23. The linear motor as defined in Claim 18, wherein said yoke section formed of a compression-formed body is divided in circumferential direction.

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24. The linear motor as defined in Claim 18, wherein an insulating layer is provided on a bonding face of said yoke section divided.

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25. A compressor including a linear motor, said motor comprising:  
a yoke section formed by a compression-formed body made of metal magnetic particles; and  
a mover vibrating along said yoke section.

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26. A linear motor comprising:  
(a) a tubular outer yoke;  
(b) a tubular inner yoke disposed in said outer yoke;  
(c) a coil provided to one of said outer yoke and said inner yoke;  
(d) a permanent magnet vibrating between said outer yoke

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and said inner yoke following a magnetic flux produced by said coil; and

(e) a vibrator supporting said permanent magnet,

wherein at least one of said outer yoke and said inner yoke is formed by arranging a plurality of multi-layered blocks in an annular shape,

5 and a space between adjacent blocks is filled with a compression-formed body.

27. A compressor including a linear motor, said motor comprising:

(a) a tubular outer yoke;

(b) a tubular inner yoke disposed in said outer yoke;

10 (c) a coil provided to one of said outer yoke and said inner yoke;

(d) a permanent magnet vibrating between said outer yoke and said inner yoke following a magnetic flux produced by said coil; and

(e) a vibrator supporting said permanent magnet,

15 wherein at least one of said outer yoke and said inner yoke is formed by arranging a plurality of multi-layered blocks in an annular shape, and a space between adjacent blocks is filled with a compression-formed body.

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